

SAU 21 Science Competencies/Standards K-8

	Competency Statements	Standards
K-4	<p>Science Students will understand and apply scientific concepts and practices.</p>	<p>Notes Resources: Mystery Science</p>
5th (SMS Only)	<p>Life Science Students will explain how organisms develop, interact, and change over time.</p>	<ol style="list-style-type: none"> 1. From Molecules to Organisms: Supports an argument that plants get the materials they need for growth chiefly from air and water. 2. Ecosystems: Develops a model to describe the movement of matter among plants, animals, decomposers, and the environment.
	<p>Earth and Space Science Students will demonstrate an understanding of Earth’s place in the universe, Earth’s systems, and the role of human activity.</p>	<ol style="list-style-type: none"> 1. Earth’s Place in the Universe (1): Supports an argument that differences in the apparent brightness of the sun compared to other stars is due to their relative distances from Earth. 2. Earth’s Place in the Universe (2): Represents data in graphical displays to reveal patterns of daily changes in length and direction of shadows, day and night, and the seasonal appearance of some stars in the night sky. 3. Earth’s Systems (1): Develops a model using an example to describe ways the geosphere, biosphere, hydrosphere, and/or atmosphere interact. 4. Earth’s Systems (2): Describes and graphs the amounts and percentages of water and fresh water in various reservoirs to provide evidence about the distribution of water on Earth. 5. Earth and Human Activity: Obtains and combines information about ways individual communities use science ideas to protect the Earth’s resources and environment.
	<p>Physical Science Students will explain and predict a wide variety of phenomena using their understanding of the structure of matter and of the interactions between matter and energy.</p>	<ol style="list-style-type: none"> 1. Matter and Its Interactions (1): Develops a model to describe that matter is made of particles too small to be seen. 2. Matter and Its Interactions (2): Measures and graphs quantities to provide evidence that regardless of the type of change that occurs when heating, cooling, or mixing substances, the total weight of matter is conserved. 3. Matter and Its Interactions (3): Makes observations and

		<p>measurements to identify materials based on their properties.</p> <ol style="list-style-type: none"> 4. Matter and Its Interactions (4): Conducts an investigation to determine whether the mixing of two or more substances results in new substances. 5. Motion and Stability (1): Supports an argument that the gravitational force exerted by Earth on objects is directed down. 6. Motion and Stability (2): Uses models to describe that energy in animals' food was once energy from the sun.
	<p>Science and Engineering Practices Students will develop the practices necessary to engage in scientific inquiry, acquire knowledge, and develop solutions.</p>	<ol style="list-style-type: none"> 1. Ask Questions and Define Problems: Asks and refines questions that lead to descriptions and explanations of how the natural and designed world works and which can be tested. 2. Developing and Using Models: Develops a model to describe phenomena. 3. Planning and Carrying Out Investigations: Plans and carries out investigations working collaboratively as well as individually to collect data to answer questions. 4. Analyzing and Interpreting Data: Analyzes and explains data using tools, technologies, and/or models. 5. Using Mathematics and Computational Thinking: Measures and graphs quantities to address scientific and engineering questions and problems. 6. Constructing Explanations and Designing Solutions: Generates and compares multiple solutions to a problem based on how well they meet the criteria and constraints of the design problem. 7. Engaging in Argument from Evidence: Supports an argument with evidence, data, or a model. 8. Obtaining, Evaluating, and Communicating Information: Obtains and combines information from books and/ or other reliable media to explain phenomena or solutions to a design problem.
6-8	Competency Statement/s	Standards

	<p>Life Science Students will explain how organisms develop, interact, and change over time.</p>	<ol style="list-style-type: none"> 1. From Molecules to Organisms: Demonstrates an understanding of the ways cells contribute to the function of living organisms. 2. Ecosystems: Demonstrates an understanding of how a system of living and non-living things operates to meet the needs of the organisms in the ecosystem. 3. Heredity: Demonstrates an understanding of how living organisms pass traits from one generation to the next. 4. Biological Evolution: Demonstrates an understanding of how organisms change over time in response to changes in the environment.
	<p>Earth and Space Science Students will demonstrate an understanding of Earth's place in the universe, Earth's systems, and the role of human activity.</p>	<ol style="list-style-type: none"> 1. Earth's Place in the Universe: Demonstrates an understanding of Earth's place in the universe in relation to the solar system, the Milky Way galaxy, and the universe by making models and examining historical data. 2. Earth's Systems: Demonstrates an understanding of how energy, water and matter cycle through Earth's systems. 3. Earth and Human Activity: Explains the ways that human activities impact Earth's systems.
	<p>Physical Science Students will explain and predict a wide variety of phenomena using their understanding of the structure of matter and of the interactions between matter and energy.</p>	<ol style="list-style-type: none"> 1. Matter and Interactions: Demonstrates an understanding of how particles combine to produce a substance with different properties and how thermal energy affects particles. 2. Motion and Stability: Demonstrates an understanding of physical interactions between objects and within systems of objects. 3. Energy: Demonstrates an understanding of how energy can be transferred from one object to another. 4. Waves and their Applications: Demonstrates an understanding of the characteristic properties of waves and how they can be used.
	<p>Science and Engineering Practices Students will develop the practices necessary to engage in scientific inquiry, acquire knowledge, and develop solutions.</p>	<ol style="list-style-type: none"> 1. Ask Questions and Define Problems: Asks and refines questions that lead to descriptions and explanations of how the natural and designed world works and which can be tested. 2. Developing and Using Models: Develops, constructs, and uses models to represent ideas, explanations, and

relationships in the natural and human-made world.

3. **Planning and Carrying Out Investigations:** Plans and carries out investigations working collaboratively as well as individually to collect data to answer questions.
4. **Analyzing and Interpreting Data:** Analyzes and explains data using tools, technologies, and/or models.
5. **Using Mathematics and Computational Thinking:** Accurately applies appropriate mathematical concepts and methods to answer scientific questions or engineering problems.
6. **Constructing Explanations and Designing Solutions:** Constructs explanations and designs solutions using multiple sources of evidence (qualitative and quantitative) consistent with scientific ideas, principles and theories.
7. **Engaging in Argument from Evidence:** Constructs and presents a convincing argument that uses a relevant amount of evidence to support or refute claims for either explanations for solutions about the natural and designed world(s).
8. **Obtaining, Evaluating, and Communicating Information:** Effectively obtains, reads, and communicates credible scientific information.